In the Claims:

Claims 1, 3, and 20, amend to read as follows:

1. (Amended) A microchannel Cross load array, comprising:

a cathode,

an array of sample well,

an array of waste wells, said sample wells comprising twice the number of waste wells,

an anode, and

an array of functionally identical channels, each channel having an injection point connected with one well of said array of sample wells, connected with one well of said array of waste wells, connected with said cathode and connected with said anode.

3. (Amended) The microchannel Cross load array of Claim 1, wherein said sample wells are selected from the group to define substantially circular holes, tapered holes, and holes.

20. (Amended) An architecture for microchannel arrays using T or Cross loading for injection and separation chemistry applications performed in microfluidic configurations,

said architecture producing a dense layout of functionally identical shaped microchannels, sample wells, and waste wells, and including a common cathode and a common anode,

said microchannels each having an injection point interconnecting a sample well, a waste well, a cathode and an anode,

said microchannels each defining equal length flow paths between said injection point and said waste well, and between said injection point and said cathode.

Please add the following claims:

29. The microchannel Cross load array of Claim 1, wherein said array of functionally identical channels comprises at least one pair of functionally identical channels.

30. The microchannel Cross load array of Claim 1, wherein said array of functionally identical channels comprises a plurality of pairs of functionally identical channels.

31. The microchannel Cross load array of Claim 30, wherein each of said plurality of pairs of functionally identical channel have a common waste well.

32. The microchannel Cross load array of Claim 1, wherein each of said array of functionally identical channels have a same length from said injection point to said sample well, to said waste well, to said cathode, and to said anode.

33. The microchannel Cross load array of Claim 31, wherein said common waste well is positioned in alignment with at least one sample well.

34. The microchannel Cross load array of Claim 31, wherein said common waste well is located in an offset position relative to at least one sample well.